The Effect of Opportunity Cost and Pacifism on Protests in Occupied Regions

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Abstract

This paper examines how the opportunity costs of the leaders of a national protest movement, and the intrinsic pacifism of the occupier, affect the nature of the movement against occupation. A two-stage game is modeled, in which a protest leader and the external occupier fight over the control of the population of an occupied region. The occupier can choose a level of force to punish the leader and other participants of the protest movement. The leaders of the protest can actively convert the populace to protest. The findings of this paper indicate that under certain circumstances leaders who have a greater opportunity cost of leading protests may be more active, compared to leaders with lower opportunity costs. Further, the former may be able to lead a movement with more mass support. This paper also characterizes equilibria where a less pacifist occupier can actually de-escalate the conflict with the protestors. The characteristics of the population residing in the occupied region, the nature of punishment that is being meted out to the protestors, and the structure of enforcement costs that lead to these outcomes, are discussed in the paper.

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Keywords: Conflict, Protest, Revolt.

1 Introduction

1.1 Background

The aim of this paper is to analyze how the nature of a national protest or liberation movement, against external occupation, might be affected by the nature of decision-makers on both sides of the conflict. On one side of the conflict, there are the protest leaders leading the protest movement against occupation. On the other side, there are the leaders of the occupying force (maybe a government or a prime decision-maker). This paper is motivated by two seemingly counter-intuitive outcomes that have been known to occur in the past, namely: (i) a protest leader whose opportunity cost may be very high, but he or she still very actively leads a powerful protest movement; (ii) an occupier whose level of aggression is very high, but he or she still faces a strong protest. Based on these two observations, two corresponding questions are studied in this paper. First, how is the nature of a protest movement affected by the opportunity costs of the protest leaders who lead these movements? Second, how is the nature of the protest movement affected by the degree of pacifism of the leaders of occupiers? In order to simplify the analysis, I will henceforth assume that the

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protest movement is led by a representative leader, known as the "protest leader". On the other hand, I assume the occupying force is lead by a central authority, henceforth known as the "occupier".

Before proceeding further, let me clarify what I mean by the phrase "nature of a protest movement". In the model analyzed in this paper, the nature of a protest movement (or uprising) is described by: (i). The level of activity by the protest leader; and (ii). The level of mass participation by the population of the occupied region. In this context, when I mention the "level of activity by the protest leader", I am not asserting that the protest leader undertakes any specific kind of activity. Her activity, which I have tried to broadly capture in this model, may include a certain combination (in various degrees) of propaganda, holding rallies or marches, non-cooperation, direct attacks, and other acts normally seen in revolts.

What is the motivation behind the first question related to opportunity costs? Opportunity costs of protest leaders include both economic and non-economic cost components like financial, professional, psychological, moral, familial and social costs. Given the different social, economic, professional and political backgrounds of protest leaders in history, their opportunity costs for leading protest movements, have been different. This is observed by studying the contrasting leadership elements in the Indian Freedom Struggle, the Irish Republican Movement, the Israel-Palestinian Conflict, the Kashmir Separatist Movement, and numerous others. For example, in the case of the Indian Independence Struggle, the moral values of Gandhi and the socioeconomic background of Nehru (hence their opportunity costs of protest) were quite different from those of the previous leaders of the Congress Party.[1] Yet they were able to lead a more successful independence struggle, with greater mass-support, compared to the latter. Historical facts like these lead us to the first question. As will be seen from the model, it is possible for leaders with greater opportunity cost to be more active and lead protests with more mass-support. Possibilities for such a seemingly counter-intuitive outcome may arise in a multi-agent game because the leaders' strategy may depend not only on their opportunity cost, but also on the strategy of the occupier. A contribution of this paper lies in identifying the specifics of the environment that make this outcome possible. It is identified how certain factors, like the intrinsic population characteristics of the occupied area, the nature of the punishment inflicted on the protest leaders, and enforcement costs, contribute to these outcomes.

The second question, related to the degree of pacifism of the occupier, is driven by the fact that in many real world conflicts, the command of occupying forces has been transferred between governments that have different attitudes towards the protestors. For example, the Labor governments in Israel have generally been more pacifist compared to Likud governments in dealing with Palestinian uprisings. In this paper I have characterized equilibria where having a less pacifist occupier may lead to the escalation of the protest. As

[1] Note that when the Non-Cooperation Movement (1920-22) got out of hand, and led to violence, the moral costs for Gandhi were so great that he actually suspended the movement. As for Nehru, he belonged to the Anglicized upper class, and had strong social ties with the British elites. These ties became strained when he joined the independence movement.

before, I have identified the primitives (including the population characteristics and the nature of punishment) that give rise to these equilibria.

In order to study the questions raised in this paper, I have modeled a two-stage game, in which a protest leader and the external occupier fight over the control of the population mass of the occupied region, with the occupier having a first-mover advantage and the protest leader moving in the second stage of the game. This game is analyzed in Section 2. [2] Notable contributions in this area include Grossman's (1991) model of insurrections and his study of kleptocracy and revolution (1991). Roemer's (1985) article, in which he rationalizes revolutionary ideology as a strategic device of the revolutionary leaders (rather than any intrinsic pre-commitment on their part), is also significant. Kuran (1989) identifies that preference falsification by the masses might be a reason why some of the major revolutions in history seem to be sudden occurrences, without prior warnings of social discontent. Esteban & Ray (1999) discuss the links between the level and pattern of social conflict and the level of polarization in society.

The above literature recognizes the importance of leadership in the revolutionary process. However, to the best of my knowledge, these contributions have not adequately studied the impact of opportunity costs of revolutionary leaders on the conflict process.[3] Thus, one of the contributions of this paper lies in the incorporation of opportunity costs (where such costs might even be non-pecuniary or non-economic in nature). Further, how conflict processes have been influenced by the degree of pacifism of the occupier, is also an issue that has not received due attention in the literature. Yet, as seen in the earlier discussion of historical facts, these factors are present and pertinent in most anti-occupation struggles. A clear understanding of the impact of these factors is crucial to the understanding of such conflicts. The current paper seeks to fill this gap in the literature. I will demonstrate that the answers to the two questions analyzed in this paper depend a great deal on certain underlying population characteristics, and the nature of punishment that is being inflicted. To the best of my knowledge, this paper is unique in demonstrating the connection between these fundamental population characteristics, the intrinsic nature of punishment, the opportunity cost of protest leaders, and the pacifism of the occupier - in determining the nature of a protest movement.

The structure of the paper is as follows. Section 2 analyzes protest and its control as a two-player game between the occupier and protest leader. Section 3 analyzes how the nature of a protest movement is affected

[2] Other authors have also used sequential games to study various aspects of conflict, protest, revolution and repression. For surveys of this literature see Hartley and Sandler (1995), Garfinkel and Skaperdas (1996), Sandler and Hartley (2004).

[3] Though some (Grossman, 1991 & 1999, and Hirshleifer, 2000, among others) have recognized that the presence of competing "productive activities" would impact the participation of the masses ("peasant or worker families" in Grossman's papers) in revolutionary activities. This focus of Grossman's papers, however, is to model the behavior of the masses in the revolutionary process - and not the behavior of revolutionary leaders. Further, it is interesting to note that Grossman does not explicitly include the role of punishment in his model of insurrection - an aspect included in this paper. Roemer (1985) does incorporate punishment in his model of revolution (as part of which he models the decision process of revolutionary leaders), but disregards the presence of competing productive opportunities for the revolutionaries. Hirshleifer (2000) models conflict between rival rulers in his study of conflict technology, but ignores the behavior of the rulers' subjects. Further, Hirschliefer's model does not incorporate the notion of punishment, as it primarily analyzes conflict in the context of territorial conquest and expansion.

by the opportunity costs of the protest leader and the pacifism of the occupier. Section 4 concludes the paper.

2 Protest and its control as a two player game

2.1 Players, decision variables, and the payoff structure

There are two players, the protest leader and the occupier. The decision variables of these players are an 'activity level' and 'permissiveness level' respectively. Let a and c denote these respective decision variables. Let $a \in [0,1] \equiv A$, and $c \in [0,1] \equiv A'$, with 0 being the least and 1 the highest possible level in either case. The objective of both players is to maximize their own payoff arising from the revenues and costs that will arise due to their own action and that of their opponent. I will discuss below how such revenues and costs are generated. An environment of perfect information and common knowledge is assumed throughout the paper.

The protest leader and the occupier are the key players in the model. There is also a fixed population mass residing in this region. A certain percentage of the total population mass gets converted to protest, depending on the players' strategies.[4]

Let f denote the 'conversion function', which maps every pair (a, c) to a population percentage in the interval $[0, 100]$.[5]

$f : A \times A' \longrightarrow [0, 100]$

The function f is assumed to have the following properties:

A1. Conversion Effect of Activity: f is strictly increasing and concave in a, i.e., $f_a > 0, f_{aa} < 0$.

A2. Conversion Effect of Permissiveness: f is strictly increasing and convex in c, i.e., $f_c > 0, f_{cc} > 0$.

The first assumption states that the decision of a greater level of protest activity by the leadership converts a greater percentage of the population to protest.[6] More activity by the leader (such as propaganda activity or direct attacks) might persuade more people to join her cause. [7] It is assumed that there are decreasing marginal returns to a with respect to conversion. In other words, the conversion function behaves like a

[4] In what follows we ignore the free-rider problem associated with collective action. In reality, such problems have been overcome in many historical contexts. We refer the reader to Sandler (1992), for a survey of various means by which the collective action problem has been overcome in numerous situations.

[5] This function bears resemblance to the 'contest success functions' used by Skaperdas (1996), and Hirshleifer (2000). It is to be noted, though, that contest success functions are essentially probability functions, denoting the chance of success in contests.

[6] It may be assumed that the converted people indulge in the same level of activity as the protest leader. That, however, is not important: one might also assume that the leader asks the converted mass to engage in a certain given level of protest activity.

[7] There is another way in which assumption A1 may be justified. Under certain situations, a leader with a higher decision level of activity might be able to coerce a greater percentage of the population to side with them, especially if that activity is violent in nature. In that case, the populace might be more fearful of her than a leader with a lower decision level (of violence). In such a scenario, though the population may not itself be indulging in protest activities, they would be lending 'tacit' support out of fear to the violence undertaken by the leader. This situation is in fact akin to the situation in Kashmir during 2002, where militants coerced the population by indulging in violent activities, both against the population and the controlling forces. This created an atmosphere of terror under which the population was fearful of participating in democratic activities. This fact of non-participation was then used by the militant organizations in international fora to gain political mileage.

usual production function, as far as input a is concerned.

The second assumption states that if the occupier is more permissive, for a given decision level of activity by the protest leader, then the population mass takes advantage of that fact and converts to protest in greater numbers. It may be reasonably argued that there are increasing marginal returns to conversion with regard to the level of permissiveness of the occupier.

Note that the nature of the conversion function gives information regarding the nature of the population of the occupied region. For example, how susceptible is the population to revolutionary propaganda? This can be measured, for specified functional forms, by the elasticity of the conversion function with respect to a. How would the population react to a lessening of controls by the occupier? It is possible to measure this by the elasticity of the conversion function with respect to c, for specified functional forms.

Depending on the percentage of the population converted to protest, a certain amount of revenue (political gains for example) R accrues to the protest leader and R^0 to the occupier. For the protest leader, it is assumed this revenue is a linear function of $f, R = \omega f$. The occupier's revenue level R^0 depends on the percentage of the population not converted to protest and is $R^0 = \rho(100 - f)$, where $\rho > 0$.

I will now describe the players' costs. These costs from their own action and that of their opponent. There is a 'punishment function' p which maps every pair (a, c) to a punishment level $P \in [0, \infty)$.The function p describes the technology of punishment. Punishment is a cost for the protest leader and is administered by the occupier.

$p : A \times A' \longrightarrow [0, \infty)$

Let $P = \phi p(a, c)$ where ϕ is a scaling parameter. So, punishment P is a monotonic transformation of p.

The function p is assumed to reflect the following properties:

A3. Punishment Effect of Activity: p is strictly increasing and convex in a, i.e., $p_a > 0, p_{aa} > 0$.

A4. Punishment Effect of Permissiveness : p is strictly decreasing and convex in c, i.e., $p_c < 0, p_{cc} > 0$.

It is assumed that given a level of permissiveness, punishment increases for an increase in activity. Also, the punishment schedule p is such that the marginal rate of punishment increases with the level of activity.

The assumption of *punishment effect of permissiveness* is based on the logic that any credible punishment level should depend not only on the level of activity of the protest leadership, but also on the occupier's action. This assumption requires that for any level of activity by the protest leader the punishment delivered is more, if the occupier was less permissive. Now, what is measured by the permissiveness parameter c? Parameter c measures the level of military or police provision by the controller.[8] A larger, better equipped, and deployed

[8] To deliver a certain level of punishment (for a given activity level) there needs to be an appropriate force to apprehend the protestors. In other words, the level of policing is very important - the size of the police and military, their equipage, and proper deployment is essential in apprehending the protestors. These combined features are captured in the variable c, the level of permissiveness.

military or police force would lead to less permissiveness, or a lower c in our model. It is assumed that punishment decreases at an increasing rate for greater permissiveness.

Thus, the level of actual punishment that might be credibly meted out would depend on the actions of both the players. The punishment function recognizes that the activities of both the concerned parties need to be taken into account, since actual punishment would not only depend on protest activity, but also on the level of policing. For further discussions on desirable features of 'punishment technology' see Becker (1968) and Mookherjee & Png (1994). We note that the punishment function gives information regarding the characteristics of the punishment being delivered by the occupier. For example, are successive increases in punishment very harsh for increases in protest activity (which may be measured by the elasticity of the conversion function with respect to a)? If the occupier reduces the size of its army, is its ability to punish greatly diminished (which may be measured by the elasticity of the conversion function with respect to c)? Lastly, there are no special restrictions on the cross-partials of the conversion and punishment functions, or $f_{ac} \gtreqless 0$ and $p_{ac} \gtreqless 0$. These assumptions regarding the conversion and punishment functions mean that as permissiveness increases, the marginal effect of activity by the leadership on conversion and punishment may either increase or decrease. Thus, more permissiveness might or might not increase the receptiveness of the population to the activities of the protest leader. Similarly, as more permissive environment might mean that punishment is less for protest activities in absolute terms, but the marginal increase for more activity might not necessarily be lower.

I will now discuss a very important feature of the model. There is a 'opportunity cost' C of a certain activity level for the protest leader, in addition to the punishment cost mentioned earlier. There is a function which maps every $a \in [0, 1]$ to a opportunity cost space C, or $C = \psi g(a)$ where ψ is a finite positive scalar. Opportunity costs are increasing and convex in the level of activity, i.e. $g_a > 0, g_{aa} > 0$. The incorporation of this opportunity cost distinguishes our model from those of previous authors. The reasons why such costs might arise have already been discussed in detail.

Coming to the cost structure of the occupier, there is an 'enforcement cost' E for administering punishment to the leadership group. This cost is given by $E(P) = \eta P$. This cost includes not only the pecuniary costs of provisioning the army, but also other non-pecuniary costs like international sanctions and boycotts that the occupier faces for taking action against the protestors.[9]

Using notation developed above, the payoff of the protest leader can be written as:

$\pi(a, c) = R - C - P = \omega f - C - P = \omega f(a, c) - \psi g(a) - \phi p(a, c)$

The occupier's payoff is:

[9] A real-world example of such non-pecuniary costs would be the international pressures faced by Israel for its actions to control Palestinian uprisings in the West Bank and Gaza Strip. Of course, international sanctions may have pecuniary losses (like loss in international trade) as well.

$\tau(a, c) = R^0 - E = \rho(100 - f) - \eta P$

$= \rho[100 - f(a, c)] - \mu p(a, c)$, where $\mu = \eta\phi$

Do protest leaders and the occupiers in the actual world really try to maximize payoff functions similar to the ones described above? While there is little doubt that considerations of punishment and costs would figure in their decisions, there might be some debate whether these players would attach much importance to the level of population being converted to protest. Even though there is a connection between the success of a protest movement and the level of mass participation, critics might argue that the exact nature of this connection is open to debate. Their argument might be that the fundamental objective of the protest leader is to achieve independence, so her payoff function should explicitly reflect this particular objective, rather than the objective of converting the population to protest. While acknowledging some of the critics' concerns, I believe that the payoff functions outlined above capture the essence of the day-to-day decision making processes of the leaders in many independence movements. As an example, in the Indian Independence Movement, for a long period the ultimate goal of independence seemed to be distant and elusive. The daily focus and activities of the independence leaders was geared more towards disseminating the idea of self-rule and 'building a nationwide mass movement'.[10] As this paper does not seek to model the entire revolutionary process, from conception to culmination, but only seeks to capture a snapshot of the process (in which I analyze certain characteristics of an ongoing movement), the payoff functions used in the model are suitable.

2.2 The two person game and its solution

It seems logical to model the game between the protest leader and the occupier as a sequential, rather than a simultaneous move game. A police force or army needs to be in place beforehand in order to apprehend and deter the protesters. In the real word, governments decide and employ their armies a priori, in anticipation of attacks.[11] However, attacks still take place, even after the attackers account for the police presence. In order to model this situation, I will consider a two-stage perfect information game, with the occupier acting in the first stage and the protest leader doing so in the second stage. The players get to act only once in this model. The occupier has complete information about the protest leadership's best response to its own strategy. After observing the occupier's action, the protest leader maximizes her payoff in the second stage of the game.

I will solve for the subgame perfect equilibrium of the two-player game through backward induction. In the second stage, the protest leader solves the problem:

[10] The focus of the Non-Cooperation Movement (1918-22) against the British, led by Gandhi, seems to be an example of this. he British historian Nigel Harris documents the events and occurrences of British India during this period in his book 'National Liberation' (1990).

Some details may also be found at the following Indian history website: <http://www.nos.org/ss10/ss4h24.1.htm>.

[11] In a related context, police patrols are put in place in criminal neighborhoods before robberies take place. If the authorities decide whether to employ the police at the time of robberies, criminals would not be either apprehended or deterred.

Maximize:$_{\{a\}}$ $\pi = \omega f(a, c^*) - \psi g(a) - \phi p(a, c^*); 0 \leq a \leq 1$

such that: $\pi \geq 0$.

The FOC for an interior solution to the protest leadership's problem is:

$\omega f_a(a, c^*) - \psi g_a(a) - \phi p_a(a, c^*) = 0$

The solution to the above equation gives the reaction function of the protest leadership:

$a^* = a^*(c^*, \omega, \psi, \phi)$

Lemma 1. $\frac{\partial a^*}{\partial \psi} < 0$ *always.*[12]

This implies that if the cost of activity increases, ceteris paribus, the protest leader will curtail activity.

Lemma 2. The reaction function of the protest leader is positively (negatively) sloped, i.e. $\frac{\partial a^*}{\partial c^*} \gtrless 0$, *iff* $\omega f_{a^*c^*} - \phi p_{a^*c^*} \gtrless 0$.[13]

When the reaction function is positively (negatively) sloped, a and c are strategic complements (substitutes) for the protest leader. From lemma 2, it is seen that for strategic complementarity, there should be a positive marginal gain in the protest leader's payoff for an increase in permissiveness, even with some increase in their activity. On the other hand, for strategic substitutes, there would be a positive gain for increase in permissiveness, only by cutting back on activity. If however, permissiveness were to decline, more activity could be substituted for permissiveness in order to maintain payoff levels.

The occupier's decision problem occurs in the first stage of the game. The occupier solves:

Maximize:$_{\{c\}}$ $\tau = \rho[100 - f(a^*, c)] - \mu p(a^*, c); 0 \leq c \leq 1$

such that: $\tau \geq 0$.

The FOC for an interior solution to the occupier's problem is:

$-[\rho f_{a^*} + \mu p_{a^*}]\frac{\partial a^*}{\partial c^*} - [\rho f_c + \mu p_c)] = 0 \equiv F$

The solution to this equation gives us $c^* = c^*(a^*, \rho, \mu)$.

The subgame perfect equilibrium of this game is the strategy pair (a^*, c^*) which satisfy the simultaneous solution of the FOCs of the protest leader and the occupier.[14]

Condition C2. As $f_{a^*}, p_{a^*}, f_c > 0$, and $p_c < 0$, *a solution to the problem exists for* $\frac{\partial a^*}{\partial c^*} > 0$ *only if* $\mu\,|p_c| > \rho\,|f_c|$ *and for* $\frac{\partial a^*}{\partial c^*} < 0$ *only if* $\mu\,|p_c| < \rho\,|f_c|$ *at equilibrium.*

[12] As $\frac{\partial a^*}{\partial \psi} = \frac{g_{a^*}}{\omega f_{a^*a^*} - \psi g_{a^*a^*} - \phi p_{a^*a^*}}$, the result follows from the assumptions regarding the partials.

[13] Since $\frac{\partial a^*}{\partial c^*} = h_{c^*} = -\frac{\omega . f_{a^*c^*} - \phi . p_{a^*c^*}}{\omega . f_{a^*a^*} - \psi . g_{a^*a^*} - \phi . p_{a^*a^*}}$ and the denominator is always negative.

[14] For conditions for which there is a subgame perfect equilibrium to games of perfect information (as in this model) see Harris (1985). The assumptions with respect to the second partials of the conversion, communication, and punishment cost functions ensure that the payoff function of the protest leader is strictly concave in her strategies. I assume that the following sufficiency condition for the strict concavity of the occupier's maximand function w.r.t. c is satisfied at (a^*, c^*): $-[(\rho f_{a^*a^*} + \mu p_{a^*a^*})(a_c^*)^2 + (\rho f_{a^*} + \mu p_{a^*})a_{cc}^* + (\rho f_{cc} + \mu p_{cc})] < 0$. The satisfaction of this condition does not violate the assumptions regarding the partials of the conversion and punishment functions. For the reaction function of the protest leader being strictly monotonic, the equilibrium to this game will be unique. Further, this second order condition can hold simultaneously with the conditions outlined in the main propositions of the model, for sufficiently high values of f_{cc} and p_{cc}, even without imposing strong restrictions on the values of a_{cc}^*.

This is because the term $[\rho f_{a^*} + \mu p_{a^*}]$ in the above expression is always positive, hence the term $[\rho f_c + \mu p_c]$ needs to be suitably positive or negative, according as a_c^* is negative or positive for the FOC of the occupier to hold in equilibrium.[15]

3 Implications of the model

3.1 The effect of leadership type on the nature of protest

A protest leader having an intrinsically greater opportunity cost of decision at every level of protest activity is defined as a 'higher-cost' leader.

Definition 1. (Higher-Cost Leader): Protest leader i is defined to be 'higher-cost' than leader j if $\psi^i > \psi^j$.

Protest leader i having $\psi^i > \psi^j$ has higher opportunity costs of any level of protest activity than leader j. Recall that ψ is the weighting parameter of the opportunity cost function, in the payoff of the protest leadership. From historical examples, a higher opportunity cost leadership might have either economic, or psychological, or moral costs of greater protest activity. For example, in the Indian Independence Movement, Nehru's opportunity cost of leading the independence movement had a great deal of non-economic social cost for him. Given that Nehru was educated in Britain, was a barrister, and was intimate in the highest British social circles, his decision to engage in anti-British activities had certain opportunity costs for him. These costs increased as he distanced himself more and more from the British by engaging more and more in the independence struggle. Needless to say, these opportunity costs were not present for other leaders without Nehru's social connections.

I will analyze below how the equilibrium level of protest activity and popular participation changes when a movement is lead by a higher opportunity cost leadership, versus a lower opportunity cost one. For this, I will consider the effect of a variation of ψ on the equilibrium level of activity and mass participation. But before performing this exercise, let me define how the level of mass support for a protest movement will be measured.

Remark. A protest movement is defined has greater 'mass-support' vis-a-vis another, if the level of conversion f^* *is higher in the former compared to the latter.*

The above remark simply states that the equilibrium level of conversion (measured by the equilibrium value given by the conversion function) measures the level of mass support for the protest movement. A movement with more mass support will have a higher f^*.

The following propositions characterize equilibria where activity rises for the leadership moving to the hands

[15] A diagrammatic representation of the equilibrium is available upon request. The interested reader can also check that an upward sloping reaction function for the protest leader implies a comparatively low c^* and vice versa. This is seen by computing the equations for the iso-utility curves of the occupier and observing that along the negatively (positively) sloped stretches of those curves, $\rho f_c + \mu p_c$ is positive (negative). Combining this with condition C2 gives the desired result.

of a higher-cost group. It will be observed that it is not automatic that a higher-cost leadership will indulge in less activity.[16] I will also analyze the 'mass support' level of the protest movement in each case. It will be possible to conclude on the nature of conversion and punishment functions that lead to these results. As mentioned before, the nature of these functions shed light on the nature of the population,[17] and the type of punishment, that need to exist for these outcomes to occur.

Proposition 1: For a and c *being strategic complements (i.e.* $\frac{\partial a^*}{\partial c^*} > 0$*) for the protest leader, a leader with higher opportunity costs will be more active compared to ones with lower opportunity cost if: (i).* $\frac{\partial^2 a^*}{\partial \psi \partial c^*} < 0$; *(ii).* $\mu \left| \frac{\partial^2 p}{\partial a^{*2}} \right| > \rho \left| \frac{\partial^2 f}{\partial a^{*2}} \right|$ at c^*; *and (iii).* $\left| \frac{\partial a^*}{\partial c^*} \frac{dc^*}{d\psi} \right| > \left| \frac{\partial a^*}{\partial \psi} \right|$ *. Under these conditions, the protest movement has greater mass-support for a higher-cost leader.*

Proof: See appendix 1. ⊟

What is the interpretation of this proposition? First, recall from lemma 2 that for a and c being strategic complements, if the occupier decreases its troops, the protest leader needs to increase effort to recruit more followers and increase her payoff level. Note that the case of strategic complementarity arises if the gain in conversion (in a situation of both greater activity and permissiveness) more than offsets the change in punishment.[18] This fact reveals that the populace of this region is not very keen on rebellion, and even in face of greater permissiveness, the leader needs to spend more effort converting them.

From the proof of the above proposition, note that the occupier is more permissive for a higher cost leadership. Now, what are the circumstances that would make the occupier more permissive for a higher opportunity cost leadership? For this to happen, certain conditions have to be met, as seen from the above proposition. First, the condition $\frac{\partial^2 a^*}{\partial \psi \partial c^*} < 0$ implies that for a higher-cost leadership, the reaction function $(\partial a^* / \partial c^*)$ should be steeper (if a is measured on the horizontal and c on the vertical axis of a graph), compared to a lower-cost one. So, higher opportunity costs make the former less reactive to (or less willing to take advantage of) greater permissiveness. The occupier certainly considers this fact when deciding to be more permissive.

Second, notice that $\mu \left| \frac{\partial^2 p}{\partial a^{*2}} \right| > \rho \left| \frac{\partial^2 f}{\partial a^{*2}} \right|$, which implies that the rate of increase in enforcement costs will be higher than the conversion rate, for a rise in the protest leader's activities As the occupier does not want this inflationary pressure on enforcement costs to hugely deplete its payoff, it increases permissiveness. Note that it is possible for the occupier to increase permissiveness and cut back on punishment, hence saving enforcement costs.[19] Recall that in this particular case, the higher-cost protest leader is less reactive to

[16] Note that any leader with $\psi^i > \psi^j$ fits our definition of being higher-cost. The following propositions outline conditions where a higher-cost leader (satisfying those conditions) would indulge in more activity. They do not claim that *any* higher-cost leader would be more active. Indeed, that would not make sense, since for sufficiently large values of ψ, the cost of activity would be so high that very low activity would result.

[17] For example, their susceptibility to the propaganda and other activities of the protest leader.

[18] Note that for an increase in both activity and permissiveness, punishment could either increase or decrease. For an increase, an offestting increase in conversion would be required for the payoff of the protest leader to increase.

[19] One might wonder why the occupier reduces policing, rather than making the more fundamental decision of adjusting the punishment function, and instructing the existing police force to punish less, for any given activity level. However, the occupier

greater permissiveness. It is also seen that the rate of conversion (hence the rate of loss to the occupier from conversion) is not that high. Given these facts, the occupier is able to save on enforcement costs (and actually increase its payoff level) by reducing the level of its policing, and reducing confrontation with the protest leader.[20] In this scenario, with the occupier becoming more permissive when faced with a higher-cost protest leader, the latter is more active than a lower-cost one.[21]

A final condition needs to be satisfied for greater activity by the higher-cost leader. Her opportunity cost must not be 'too high'. This makes sense, as for sufficiently large values of ψ, the opportunity cost would be so high that we would observe very low activity. In fact, higher opportunity costs have a negative impact on the activity decision of a higher-cost leader. But, for the result outlined in proposition 1, these costs must not be so high as to violate the condition $\left|\frac{\partial a^*}{\partial c^*}\frac{dc^*}{d\psi}\right| > \left|\frac{\partial a^*}{\partial \psi}\right|$. The left hand term in this inequality denotes the positive effect of the occupier's increasing permissiveness on activity level. The right hand term denotes the negative effect of greater opportunity cost on their activity [22] Finally, we observe that the protest movement has greater mass-support under these circumstances, as both permissiveness and activity level go up.

Some stylized facts of history provide a reality check of the above findings. During the Indian Independence movement, during the period 1900-47, many leaders of the Congress Party had close social ties with the British.[23] Given their high opportunity costs of indulging in protest, it was unlikely that the situation would get out of hand, even if the British were more permissive. Also, some of these leaders like Gandhi and Nehru, had great stature, and the cost of punishing them harshly was very costly for the British.[24] Given this, the British never really turned India into a garrison state, and the Congress Party was able to lead a substantial movement.[25] This situation is in sharp contrast to British policy in India in the mid-1800s, when they faced uprisings by the remnants of India's feudal class and rebellious units of the British Indian

might not want to dilute the laws requiring certain punishment for certain activities, if the police confront the protestors, at all. In fact, this pre-committment is necessary to make the protestors fearful of a higher level of policing (and plays a part in containing protest). Reducing the police level to avoid confrontation may be a way for the occupier to reduce its enforcement costs in this environment.

[20] A graphical analysis of this case is available on request. In the graph, it will observed that the reaction function of a for a higher-cost leader is steeper than lower cost one. In that case, by increasing permissiveness the occupier moves to a higher iso-utility curve, with a higher payoff level.

[21] It must be remembered, though, that if the occupier were as permissive as this to a lower-cost leader then it would face more activity in equilibrium. A lower-cost leader would indulge in less activity in equilibrium as she would face the deterrence effect of less permissiveness on the occupier's part.

[22] For explicit functional forms, the elasticities of the conversion and punishment functions with respect to a and c are crucial in obtaining our result. The interested reader may obtain a numerical example from the author , which demonstrates the role played by these elasticities.

[23] Others, like Gandhi, had moral attitudes that prevented an escalation of conflict. These leaders feared such escalation could cause the movement to get out of control, and result in violence, which they were firmly against. In fact, Gandhi cancelled the Non-Cooperation Movement when it got out of hand, resulting in violence, even when it seemed to be succeeding against the British.

[24] The role played by the cost of punishment seems to be significant. The leaders of the Bengal Revolutionary Movement in India (1907-30) were also students and intellectuals, and had high opportunity costs. But as they did not have international visibility, the enforcement cost against them (in terms of international condemnation, etc.), was not much. So the British employed very repressive tactics against them.

[25] See Ghosh (1998), Sarkar (2001), and Sharma (2005) for accounts of the evolution of the Indian independence movement.

Army [26] The leaders of these uprisings did not have high opportunity costs of insurgency, given that they were mostly dispossessed feudal nobility. The uprisings were quickly crushed with military force, and did not spread largely to the common masses. In fact, due to the aggressive response of the British, relatively few of the dispossessed nobility actually revolted - the majority did not revolt.[27]

Proposition 2: For a and *c being strategic substitutes (i.e. $\frac{\partial a^*}{\partial c^*} < 0$) for protest a leader, a leader with higher opportunity costs will be more active compared to ones with lower opportunity cost if: (i). $\frac{\partial^2 a^*}{\partial \psi \partial c^*} > 0$; (ii). $\left|\frac{\partial^2 f}{\partial a^{*2}}\right| < \frac{\mu}{\rho}\left|\frac{\partial^2 p}{\partial a^{*2}}\right|$* at *$c^*$; and (iii).$\left|\frac{\partial a^*}{\partial c^*}\frac{dc^*}{d\psi}\right| > \left|\frac{\partial a^*}{\partial \psi}\right|$. Under these conditions, the protest movement has lower mass-support for a higher-cost leader.*

Proof: The proof of the first part of the proposition is similar to the proof of proposition 1. To prove the second part of the statement suppose that the occupier was at utility level τ^* for the lower-cost group, i.e. when ψ was lower. In this case, for an increase in ψ, observe that the occupier maximizes its utility by decreasing c as its best response. Let its utility level in the latter case be τ^0. But $\tau^0 > \tau^*$, as the occupier could have stayed at least at the utility level τ^*, but chose not to do so. This is because if the occupier had remained at the initial level of c^*, given ψ had increased, a^* would have fallen (since $\frac{\partial a^*}{\partial \psi} < 0$ always). Thus, given the assumptions of our model, the occupier would have remained at least at τ^*. Therefore, the best-response reduction in c^* would only move it to a higher utility level. Now given $p_{c^*} < 0, p_a > 0$, a^* rises, and c^* falls in equilibrium for a rise in ψ, $\tau^0 > \tau^*$ only if $(100 - f^*)$ is greater, i.e. f^* is lower than the initial level. Hence, under the assumptions outlined in the proposition the protest movement is less mass supported for a higher-cost leadership. $\boxminus$

The interpretation of this proposition is as follows. As a and c are strategic substitutes in this case, if permissiveness declines, the protest leader can maintain her payoff is by increasing activity. Note that this would happen only if the population were more receptive to the protest leadership's activities or propaganda even in a less permissive environment.[28] This might be expected to occur when a population is prone to rebellion in the first place.[29] A word of caution - tI do not imply that more absolute numbers of people convert to protest in a more oppressive environment. People's receptiveness to the protest leader goes up, but the higher level of policing makes them afraid to join the protest. A combination of these two effects might mean that there are less converts in absolute terms. However, this number is still more than the number that would have converted under greater policing, had their receptiveness stayed the same.

Coming to the occupier, in this particular case it is less permissive for a higher opportunity cost leadership.

[26] The most significant uprising against the British during this period, known as the Sepoy Mutiny or the First War of Indian Independence, occurred in 1857.

[27] The feudal nobility in India still retained their traditional role as social leaders till the latter part of the 19th century.

[28] So much so that the gain in conversion through greater activity in this less permissive environment would outweigh the increase in punishment.

[29] Sometimes, more suppression by the occupier might make the population so antagonistic, that they would become more receptive to the protest leader.

The reasons why the occupier is less permissive are evident from the proposition. First, the condition $\frac{\partial^2 a^*}{\partial\psi\partial c^*} > 0$ implies that for a higher-cost leadership, the reaction function $(\partial a^*/\partial c^*)$ is flatter (if a is measured on the horizontal and c on the vertical axis of a graph), compared to a lower-cost one. So, higher opportunity costs make the former more willing to take advantage of permissiveness (or more reactive to it). So, being permissive towards a high-cost leader is a bad alternative for the occupier, as it can really cause substantial losses. This causes it to be less permissive.

The second condition $\left|\frac{\partial^2 f}{\partial a^{*2}}\right| < \frac{\mu}{\rho}\left|\frac{\partial^2 p}{\partial a^{*2}}\right|$, is equivalent to the one seen in proposition 1. However, as a and c are strategic substitutes in this case, the interpretation is a bit different. Given that the occupier decreases c here, the protest leader will increase a. It has already been seen in this case, that under conditions of less permissiveness, people become more susceptible to revolutionary propaganda or other activities. However, the second condition states that in spite of that, the responsiveness of the population to revolutionary activities (their conversion) should not be too high, beyond a point. Thus, in absolute terms their rate of conversion to the protest movement due to an increase in a (or $\frac{\partial^2 f}{\partial a^{*2}}$) should be sufficiently low.

Finally, note that higher opportunity costs lead to lesser proclivity for activity (i.e.$\frac{\partial a^*}{\partial\psi} < 0$). But here, lesser permissiveness forces the protest leader to substitute (in order to maintain a certain level of conversion), and be more active. In fact this substitution requirement should be so great as to outweigh the negative effect higher costs have on their activity ($\left|\frac{\partial a^*}{\partial c^*}\frac{dc^*}{d\psi}\right| > \left|\frac{\partial a^*}{\partial\psi}\right|$ needs to hold). Under these circumstances, a higher-cost leader will be more active - though she will lead a movement with lower mass support compared to a lower-cost leader.

A historical example of this would be the revolutionary activities launched by students and intellectuals against Tsar Alexander III of Russia during the period1881-94.[30] This revolutionary movement was launched by small groups of students and intellectuals, and had high opportunity costs (due to their social background). The Tsar adopted a high level of enforcement and employed very repressive tactics against them. However, the revolutionaries saw their actions as the only hope for galvanizing the Russian people, and were very active against the Tsar. However, their movement did not gain enough mass participation. On the other hand, it seems that the revolutionary leadership in Russia during the period 1905-17 comprised more of career politicians. As these leaders had adopted politics as a career, they arguably had lower opportunity costs of leading political (protest) movements. These leaders were able to lead more widespread movements against the Tsar, taking advantage of their lower opportunity costs (perhaps because of their natural ability to lead political protest), even without being as active as the revolutionaries of the earlier period.

It may be noted from the discussion of the above propositions that increased activity by a higher opportunity

[30] Though this example is not exactly in the context of occupied regions, we see that some of the results of this paper may be applied to more general settings as well.

cost protest leaders can come about under two circumstances. In the first case, the occupier realizes the intrinsic proclivity of the higher-cost leaders to be less active, and is more permissive in order to save high enforcement costs. The high-cost protest leaders are able to take advantage of this situation and operate more freely (be more active) than low-cost ones (who would face greater enforcement as the government is aware of their greater proclivity). Further, it is also evident (from proposition 1) that the high-cost protest leaders are able to convert the population to protest more effectively. This is because they are allowed by the circumstances to be more active, and people in this region need to be exhorted a great deal, to join the movement. In the second case, the occupier is less permissive towards the higher-cost leadership, and the latter has to be more active just in order to keep the protest movement alive. It seems that in this case, the general population is prone to join the movement, and the occupier has to guard against that. Due to the controller's actions, the populace is afraid to come out and protest, even in spite of this receptiveness. Thus, the protest leader has to be raise her efforts to win converts and preserve their movement to whatever extent possible.

3.2 Effect of occupier's attitude on the nature of protest

In this section it will be analyzed how the nature of the movement affected by the intrinsic level of pacifism of the occupier. It is assumed that a less pacifist occupier punishes the protest leader more for the same level of activity, compared to a more pacifist occupier. Further, it is assumed that it is possible to deliver this higher punishment with the given level of military or police, perhaps by instructing the existing force to act tougher. This means that for any pair (a, c) the punishment P delivered by a less pacifist occupier is greater than the punishment delivered by one more pacifist. In reality, there might be a change in the government of the occupying nation, which might bring about a change in attitude towards the protest movement.

Definition 2. (Less-Pacifist occupier): A occupier i is defined to be 'less-pacifist' than a occupier j if $\phi^i > \phi^j$.

Recall that ϕ is the weighting parameter of the punishment function. Note that if $\phi^i > \phi^j$, for any pair (a, c), $P^i = \phi^i p(a, c) > P^j = \phi^j p(a, c)$.[31]

Lemma 3. $\frac{\partial a^*}{\partial \phi} < 0$ always.[32]

This implies that if punishment increases due to a rise in ϕ, ceteris paribus, the protest leader will curtail activity. Also note that when the occupier becomes less pacifist, there are two effects for the protest leader.

[31] A less pacifist occupier is simply one who has the proclivity to punish more. We observe from the payoff function of the occupier, that inflicting a higher punishment involves greater costs for the occupier, as enforcement cost $E = \eta P$. Thus, a less pacifist occupier, who punishes more, will have greater punishment costs. This agrees with reality, where greater actions against insurgents may entail more military casualties, greater international condemnation, and higher operational costs. Some critics might suggest that enforcement costs are actually lower for a less pacifist occupier. We would argue against their reasoning, as it seems straightforward that enforcement costs (of the kind just mentioned) are greater for absolutely higher punishment.

[32] As $\frac{\partial a^*}{\partial \phi} = \frac{p_{a^*}}{\omega f_{a^*a^*} - \psi g_{a^*a^*} - \phi p_{a^*a^*}}$, the result follows from the assumptions regarding the partials.

First, for any given combination (a, c), their punishment rises. Further, a less pacifist occupier might vary the level of c as well, which would have a further effect on punishment.[33]

The following propositions consider the effect of a variation of ϕ on the equilibrium level of activity and mass participation. Equilibria where protest activity rises for a less pacifist occupier, are characterized. As before, it is possible to analyze the nature of the population and the type of punishment that need to exist, for these outcomes to occur.

Proposition 3: For a and c being strategic complements for her (i.e. $\frac{\partial a^*}{\partial c^*} > 0$), a protest leader will be more active while confronting a less pacifist occupier if: (i). $\frac{\partial^2 a^*}{\partial \phi \partial c^*} < 0$; (ii). $\mu \left| \frac{\partial^2 p}{\partial a^{*2}} \right| > \rho \left| \frac{\partial^2 f}{\partial a^{*2}} \right|$ at c^*; and (iii). $\left| \frac{\partial a^*}{\partial c^*} \frac{dc^*}{d\phi} \right| > \left| \frac{\partial a^*}{\partial \phi} \right|$. Under these conditions, the protest movement has greater mass-support when the occupier is less pacifist.

Proof: See appendix 2. ⊟

In the above proposition, a and c are strategic complements, so a protest leader is able to raise her payoff by complementing an increase in permissiveness with greater activity. As mentioned before, strategic complementarity arises if the gain in conversion more than offsets the change in punishment, when both activity and permissiveness increase. This could happen if population becomes sufficiently more responsive to their leader's activities or propaganda in a more permissive environment. Conversely, this also means that even in a more permissive environment, the protest leader has to increase activity in order to increase her payoff by winning a sufficient number of converts. One might imagine that this population is not prone to rebellion in the first place, and the combination of increased permissiveness by the controller, and exhortion by the protest leader, is necessary to induce them tojoin the movement.

Note that a less pacifist occupier is more permissive in this particular case. What causes the less pacifist occupier to be more permissive? First, the condition $\frac{\partial^2 a^*}{\partial \phi \partial c^*} < 0$ implies that in this case, when faced with a less pacifist occupier (a rise in ϕ), the reaction function of the protest leader will be steeper. So, a less pacifist occupier make the latter less willing to increase activity, even if there is a reduced amount of policing (greater permissiveness). This is understandable, as this occupier would instruct even the smaller police force to punish protestors harshly.

Second, notice that $\mu \left| \frac{\partial^2 p}{\partial a^{*2}} \right| > \rho \left| \frac{\partial^2 f}{\partial a^{*2}} \right|$. Note that as $\mu = \eta\phi$, there is a greater chance of this inequality being satisfied for a less pacifist occupier with higher ϕ. As per this inequality, the occupier's enforcement costs grow at a substantial rate (greater than the growth of the conversion rate) for an increase in protest activity. So, the occupier needs to find a way to manage these costs. It does this by decreasing the level of policing (more permissiveness). This, in the end, leads to more activity. So, the less pacifist occupier

[33] In graphical terms, the iso-utility map of the occupier undergoes a change, and there is also a shift in the reaction function of the protest leaders. The combination of these two factors produces a change in the equilibrium outcome.

actually faces greater activity, but cutting back on the level of policing saves greatly on enforcement costs. Note that if this cutback does not occur, given its natural proclivity (or maybe in case of a government, its pre-committed electoral manifesto), it will use the bigger police force or army to punish so much, that there will be huge enforcement costs.

Finally, the condition $\left|\frac{\partial a^*}{\partial c^*}\frac{dc^*}{d\phi}\right| > \left|\frac{\partial a^*}{\partial \phi}\right|$ needs to hold. This is needed because a less pacifist occupier has two effects for the protest leader. First, there is a negative effect on their activity. Second, their activity level is also affected by how this type of occupier varies c, compared to a more pacifist one. In this case c increases, and combined with the strategic complementarity of a and c, there is a positive effect on activity level. This positive effect needs to outweigh the negative one, for the net amount of activity to increase. Further, as per the proposition, not only is the protest leader more active, but the protest movement has greater mass-support under these circumstances, as both permissiveness and activity level go up.

The above proposition has interesting real world implications. It seems that more pacifist occupiers are able to maintain their military strength in occupied areas, and discourage protest activities. However, the lack of restraint of more less pacifist occupiers make the cost of maintaining military strength too much for them, as due to their predisposition for harshness, they use the military to an extent that is very costly for them (perhaps in terms of international sanctions, etc.). Hence, they are forced to consider a cutback of their military from the occupied area, which leads to greater activity by the protest leaders, and the growth of the protest movement.[34]

Proposition 4: For a and c *being strategic substitutes for her (i.e.* $\frac{\partial a^*}{\partial c^*} > 0$*), a protest leader will be more active while confronting a less pacifist occupier if: (i).* $\frac{\partial^2 a^*}{\partial\phi\partial c^*} > 0$; *(ii).* $\left|\frac{\partial^2 f}{\partial a^{*2}}\right| < \frac{\mu}{\rho}\left|\frac{\partial^2 p}{\partial a^{*2}}\right|$ at c^*; *(iii).* $\eta < \frac{1}{\left[\frac{\partial p}{\partial c^*}\right]}\left[(\rho f_{a^*} + \mu p_{a^*})\frac{\partial^2 a^*}{\partial\phi\partial c} + \left(\frac{\partial}{\partial\phi}\left[\rho\frac{\partial f}{\partial a^*} + \mu\frac{\partial p}{\partial a^*}\right]\frac{\partial a^*}{\partial c}\right)\right]$; and *(iv).* $\left|\frac{\partial a^*}{\partial c}\frac{dc^*}{d\phi}\right| > \left|\frac{\partial a^*}{\partial\phi}\right|$ *. Under these conditions, the protest movement has lesser mass-support when the occupier is less pacifist.*

Proof: The proof of the first part of the proposition is similar to the proof of proposition 3. In this case, observe that for an increase in ϕ, the occupier maximizes its utility by decreasing c as its best response. To prove the second part of the statement suppose that for a more pacifist occupier (i.e. when ϕ was lower), the payoff level was τ^0, for strategy pair (a^0, c^0) and conversion level f^0. Note that for an increase in ϕ, keeping c fixed at c^0, a would decline (as $\frac{\partial a^*}{\partial\phi} < 0$). In that case, let the occupier's payoff be denoted by τ^1, for strategy pair (a^1, c^0). For τ^1 let enforcement costs be E^1 and conversion level f^1. Note that given the properties of the conversion function, $f^1 < f^0$. However, the occupier chooses to decrease c, and not keep it fixed at c^0, taking it to payoff level to τ^* with strategy pair (a^*, c^*), with enforcement costs E^* and conversion level f^*. Then it must be that $\tau^* > \tau^1$. But as $c^* < c^0$ and $a^* > a^1$, it must be that $E^* > E^1$ (from the properties

[34] Though admittedly, such cutbacks by a pacifist government would have caused an even greater escalation. However, due to its restraint, a pacifist government does not have to undertake such cutbacks.

of the punishment function). In that case, $\tau^* > \tau^1$, only if $f^* < f^1$. Given $f^1 < f^0$, the properties of the conversion function ensure that $f^* < f^0$. Thus, the protest movement has lesser mass-support when the occupier is less pacifist.$\boxminus$

In this case, a and c are strategic substitutes, so less permissiveness by the occupier brings about greater activity by the protest leader. If permissiveness declines, the only way the protest leader can maintain a level of conversion (hence maintaining their payoff somewhat) is by increasing activity. This is possible because the population is more receptive to the protest leader for a decline in permissiveness. As mentione before, this may be a population more prone to rebel in the first place, and the controller's action aggravates them further.

From the proof of the proposition, it is noted that a more less pacifist occupier is less permissive in this case. There are reasons why the less pacifist occupier has lower permissiveness. First, the condition $\frac{\partial^2 a^*}{\partial\phi\partial c^*} > 0$ implies that for a less pacifist occupier, the reaction function $(\partial a^*/\partial c^*)$ is of the protest leader is flatter. In this case, a less pacifist occupier make the protest leader more willing to take advantage of permissiveness. As permissiveness can cause substantial losses for it, the occupier is driven towards less permissiveness.

The second condition that needs to be met is $\left|\frac{\partial^2 f}{\partial a^{*2}}\right| < \frac{\mu}{\rho}\left|\frac{\partial^2 p}{\partial a^{*2}}\right|$. As a and c are strategic substitutes, if the occupier decreases c, the protest leader will increase a. This increase in a should not succeed in converting people to the movement, beyond a certain level. Thus, in absolute terms their rate of conversion to the protest movement due to an increase in a (or $\frac{\partial^2 f}{\partial a^{*2}}$) should not be too high.

Further, the cost of increasing policing (again, perhaps in terms of international boycotts, casualty rates of soldiers, etc.) should not be too high. This is captures in the proposition by the fact that the scaling parameter η, which translates punishment levels into enforcement costs for the occupier, should be sufficiently low. Only then will the less pacifist occupier be in a position to raise its policing level.[35]

Finally, the condition $\left|\frac{\partial a^*}{\partial c^*}\frac{dc^*}{d\phi}\right| > \left|\frac{\partial a^*}{\partial\phi}\right|$ is needed. As mentioned before, there is a negative effect on the activity of protest leader, for a less pacifist occupier, who punishes more (i.e.$\frac{\partial a^*}{\partial\phi} < 0$). However, in this case, a less pacifist occupier decreases c. Combined with the strategic substitutability of a and c, there is a positive effect on activity level. This positive effect needs to outweigh the negative one, for the net amount of activity to increase.

To summarize, the population is prone to conversion in this case. The enforcement costs are low enough for the occupier vis-a-vis the possible loss from conversion. In this situation, a less pacifist occupier might increase the size of the occupational force. Given this, the protest leaders have to raise their activities to win converts and preserve their movement to whatever extent possible.If the population reacts to this by

[35] Interestingly, the condition on parameter η does not appear in proposition 3, as there the controller becomes more permissive, opposite to what we have here.

becoming more receptive to the protest leadership, then it is possible for the latter to keep the movement alive by increasing their activity level, in the face of increased policing. Overall, under these circumstances, there will be a reduction in the population's participation in the protest movement.

It is observed in this section that a less pacifist occupier can lead to a more active protest leaders under two circumstances. However, depending on population characteristics and punishment costs, these there are different implications for the nature of protest, depending on the particular circumstance. Thus, it is essential to closely analyze the population characteristics, punishment structure, and the details of enforcement costs, in order to reach proper conclusions regarding the effect of the occupier's pacifist tendencies on the protest movement.[36]

4 Conclusion

A simple model has been developed in this paper to examine two important questions related to the nature of protest (or independence) movements in regions under occupation (or disputed regions). First, how is the nature of a protest movement affected by the opportunity costs of the leaders who lead these movements? Second, how is the nature of the movement affected by the intrinsic level of pacifism (or hawkishness) of the occupiers? These questions are motivated by facts observed in historical liberation struggles (e.g. the Indian Independence Movement) and present day conflicts (e.g. the Israeli-Palestinian conflict). The answers to these questions are relevant in truly understanding the nature of such conflicts, and will assist in their successful managment.

My results indicate that under certain circumstances, leaders who have a greater opportunity cost of leading protests may be more active against the occupier, compared to leaders with lower opportunity costs. Also, under certain specified conditions, the former may be able to lead a movement with more mass support. It is demonstrated that greater activity by the protest leaders can arise under two very different cases. In the first case, the occupier reduces the level of monitoring when faced with protest leaders with high opportunity costs (and saves significant enforcement costs). In the second case, the occupier actually enforces stricter monitoring of the protestors, but the protest leaders increase their activities to overcome this stricter enforcement. I specify the conditions which lead to the first case, and those that lead to the second. As can be imagined, in both cases, the actions of the occupier and the protest leaders have specific effects on the level of mass involvement in the protest.

The model also indicates that having a less pacifist occupier might actually lead to greater activity by

[36] It would be interesting to study the Israeli-Palestine conflict in the context of our analysis. Once the fundamentals of the conflict are identified (population characteristics, etc.), it might be possible to analyze how the nature of successive Israeli governments (which varied in their attitudes) impacted the nature of the conflict. As part of future work, the validity of this paper's findings may be tested in that context.

the protest leaders. This particular outcome occurs under two different sets of circumstances. In the first circumstance, we observe greater monitoring of the protestors by the less pacifist occupier. In the second situation, the less pacifist occupier actually cuts back on the level of monitoring, due to high enforcement costs. As might be imagined, these two situations have different outcomes in terms of mass participation in the protest.

A major contribution of this paper lies in identifying and characterizing the priors which lead to the above outcomes. These priors involve the characteristics of the population residing in the occupied region, the nature of punishment that is being meted out to the protestors, and enforcement costs. Different priors lead to the nature of various protest movements being different in some crucial aspects, though they might be similar in other aspects. No doubt, a comprehensive characterization of these priors is essential in clearly distinguishing the fundamental differences between various protest movements, as well as identifying the similarities they might share. This understanding might prove crucial in developing tailor-made conflict management strategies in the context of a particular protest or liberation movement.[37]

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[37] For an informal discussion of the policy implications of this model, and a more detailed discussion of the historical contexts in which this model might be applicable, see Gupta (2007).

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Appendices

Appendix 1: Proof of proposition 1

Proof: From the FOC of the occupier :

$$\frac{dc}{d\psi}_{|c=c^*} = -\frac{\partial F/\partial\psi}{\partial F/\partial c}_{|c=c^*} = -\frac{-\left[(\rho f_{a^*}+\mu p_{a^*})\frac{\partial^2 a^*}{\partial\psi\partial c}+\left(\frac{\partial}{\partial\psi}\left[\rho\frac{\partial f}{\partial a^*}+\mu\frac{\partial p}{\partial a^*}\right]\frac{\partial a^*}{\partial c}\right)\right]}{\partial^2\tau/\partial c^2}_{|c=c^*}$$

Now, the denominator is always negative for the payoff function of the occupier being concave at c^*.
So, if $\partial F/\partial\psi_{|c=c^*} > 0$, then $\frac{dc}{d\psi}_{|c=c^*} > 0$.
But $\partial F/\partial\psi_{|c=c^*} > 0$, only if $\left[(\rho f_{a^*} + \mu p_{a^*})\frac{\partial^2 a^*}{\partial\psi\partial c} + \left(\frac{\partial}{\partial\psi}\left[\rho\frac{\partial f}{\partial a^*} + \mu\frac{\partial p}{\partial a^*}\right]\frac{\partial a^*}{\partial c}\right)\right] < 0$.
Now, f_{a^*} and p_{a^*} are positive (from the assumptions on f_a and p_a) .
And, $\frac{\partial a^*}{\partial c}_{|c=c^*} > 0$ for a and c being strategic complements.
Hence for $\frac{\partial^2 a^*}{\partial\psi\partial c}_{|c=c^*} < 0$ and $\frac{\partial}{\partial\psi}\left[\rho\frac{\partial f}{\partial a^*} + \mu\frac{\partial p}{\partial a^*}\right]_{|c=c^*} < 0$, we have $\frac{dc}{d\psi}_{|c=c^*} > 0$.
(Note that $\frac{\partial}{\partial\psi}\left[\rho\frac{\partial f}{\partial a^*} + \mu\frac{\partial p}{\partial a^*}\right] = \left[\rho\frac{\partial^2 f}{\partial a^{*2}} + \mu\frac{\partial^2 p}{\partial a^{*2}}\right]\frac{\partial a^*}{\partial\psi}$)
As per Lemma 1, $\frac{\partial a^*}{\partial\psi} < 0$,
So $\frac{\partial}{\partial\psi}\left[\rho\frac{\partial f}{\partial a^*} + \mu\frac{\partial p}{\partial a^*}\right] < 0$ only if $\left|\frac{\partial^2 p}{\partial a^{*2}}\right| > \frac{\rho}{\mu}\left|\frac{\partial^2 f}{\partial a^{*2}}\right|$ at $c = c^*$(recalling that $f_{aa} < 0$ and $p_{aa} > 0$)]
Now, $\frac{da^*}{d\psi}_{|c=c^*} = \left(\frac{\partial a^*}{\partial c}\frac{dc^*}{d\psi} + \frac{\partial a^*}{\partial\psi}\right)_{|c=c^*}$
As $\frac{\partial a^*}{\partial\psi} < 0$, it follows that for $\frac{\partial a^*}{\partial c}_{|c=c^*} > 0$ and $\frac{dc^*}{d\psi} > 0$, we have $\frac{da^*}{d\psi} > 0$ if $\left|\frac{\partial a^*}{\partial c}\frac{dc^*}{d\psi}\right| > \left|\frac{\partial a^*}{\partial\psi}\right|$ at $c = c^*$.
The first part of proposition 1 follows from the above conditions.
Now, as $\frac{dc^*}{d\psi} > 0$ and $\frac{da^*}{d\psi} > 0$, we have $\frac{df^*}{d\psi} > 0$, given $f_a > 0$ and $f_c > 0$ (per assumption).
Hence under the conditions of the proposition the protest movement has greater mass support for a higher-cost leadership ⊟

Appendix 2: Proof of proposition 3

Proof: Applying the implicit function theorem to the FOC of the occupier:

$$\frac{dc}{d\phi}_{|c=c^*} = -\frac{\partial F/\partial\phi}{\partial F/\partial c}_{|c=c^*} = -\frac{-\left[(\rho f_{a^*}+\mu p_{a^*})\frac{\partial^2 a^*}{\partial\phi\partial c}+\left(\frac{\partial}{\partial\phi}\left[\rho\frac{\partial f}{\partial a^*}+\mu\frac{\partial p}{\partial a^*}\right]\frac{\partial a^*}{\partial c}\right)+\eta p_c\right]}{\partial^2\tau/\partial c^2}_{|c=c^*}$$

The denominator is always negative for the payoff function of the occupier being concave at c^*.
So, if $\partial F/\partial\phi_{|c=c^*} > 0$, then $\frac{dc}{d\phi}_{|c=c^*} > 0$.
But, $\partial F/\partial\phi_{|c=c^*} > 0$ only if $\left[(\rho f_{a^*} + \mu p_{a^*})\frac{\partial^2 a^*}{\partial\phi\partial c} + \left(\frac{\partial}{\partial\phi}\left[\rho\frac{\partial f}{\partial a^*} + \mu\frac{\partial p}{\partial a^*}\right]\frac{\partial a^*}{\partial c}\right) + \eta p_c\right] < 0$.
Now, f_{a^*} and p_{a^*} are positive, and p_c is negative.
And, $\frac{\partial a^*}{\partial c}_{|c=c^*} > 0$ for a and c being strategic complements.
Hence for $\frac{\partial^2 a^*}{\partial\phi\partial c}_{|c=c^*} < 0$ and $\frac{\partial}{\partial\phi}\left[\rho\frac{\partial f}{\partial a^*} + \mu\frac{\partial p}{\partial a^*}\right]_{|c=c^*} < 0$, we have $\frac{dc}{d\phi}_{|c=c^*} > 0$.

(Note that $\frac{\partial}{\partial \phi}\left[\rho\frac{\partial f}{\partial a^*}+\mu\frac{\partial p}{\partial a^*}\right]=\left[\rho\frac{\partial^2 f}{\partial a^{*2}}+\mu\frac{\partial^2 p}{\partial a^{*2}}\right]\frac{\partial a^*}{\partial \phi}$)
As per Lemma 3, $\frac{\partial a^*}{\partial \phi}<0$,
So $\frac{\partial}{\partial \phi}\left[\rho\frac{\partial f}{\partial a^*}+\mu\frac{\partial p}{\partial a^*}\right]<0$ only if $\left|\frac{\partial^2 p}{\partial a^{*2}}\right|>\frac{\rho}{\mu}\left|\frac{\partial^2 f}{\partial a^{*2}}\right|$ at $c=c^*$ (recalling that $f_{aa}<0$ and $p_{aa}>0$)]
Further, we have $\frac{da^*}{d\phi}=\left(\frac{\partial a^*}{\partial c}\frac{dc^*}{d\phi}+\frac{\partial a^*}{\partial \phi}\right)$
As $\frac{\partial a^*}{\partial \phi}<0$, it follows that for $\frac{\partial a^*}{\partial c}_{|c=c^*}>0$, and $\frac{dc}{d\phi}_{|c=c^*}>0$, we have $\frac{da^*}{d\phi}>0$ if $\left|\frac{\partial a^*}{\partial c}\frac{dc^*}{d\phi}\right|>\left|\frac{\partial a^*}{\partial \phi}\right|$ at $c=c^*$.
The first part of proposition 3 follows from the above conditions.
To prove the second part of the proposition, observe that as $\frac{dc^*}{d\phi}>0$ and $\frac{da^*}{d\phi}>0$, we have $\frac{df^*}{d\phi}>0$, given $f_a>0$ and $f_c>0$ (per assumption).$\boxminus$